

REMARKS

Claims 11-14 and 19 have been amended.

In the Office Action under reply, claims 11-13 have been rejected under 35 U.S.C. 103(a) as being unpatentable over Ito et al. ("Ito") (JP 2003-139298) in view of Kanazawa (JP 59-197546) and Tsutsumi et al. ("Tsutsumi") (US Patent No. 5366820). Claim 14 has been rejected under 35 U.S.C. 103(a) as being unpatentable over Ito in view of Kanazawa and Tsutsumi and further in view of Dickman et al. ("Dickman") (US Publication No. 2001/0049038). Claim 19 was not officially rejected, although the Examiner discussed claim 19 on page 6 of the Office Action. With respect to Applicant's claims, as amended, these rejections are respectfully traversed.

Applicant's independent claim 11 has been amended to better define Applicant's invention. More particularly, amended claim 11 recites an electronic device which detects a residual capacity of a fuel cell device, the fuel cell device including a tank section which accommodates a first hydrogen storage alloy having a first desorbed hydrogen pressure in a first pressure equilibrium state and a second hydrogen storage alloy having a second desorbed hydrogen pressure in a second pressure equilibrium state, wherein the first desorbed hydrogen pressure has a higher value than the second desorbed hydrogen pressure, and a power generating section which generates electric power by using hydrogen desorbed from the tank section, comprising: a pressure detecting unit which detects a pressure of the hydrogen supplied to the power generating section; a comparing unit which compares the pressure of the hydrogen detected by the pressure detecting unit with the first desorbed hydrogen pressure and the second desorbed hydrogen pressure; an output unit which outputs (i) a first signal if the pressure of the

hydrogen detected by the pressure detecting unit is equal to or larger than the first desorbed hydrogen pressure, (ii) a second signal if the pressure of the hydrogen detected by the pressure detecting unit is less than the first desorbed hydrogen pressure and equal to or larger than the second desorbed hydrogen pressure, and (iii) a third signal if the pressure of the hydrogen detected by the pressure detecting unit is less than the second desorbed hydrogen pressure; and a control unit which operates with the electric power supplied from the power generating section. Such a construction is not taught or suggested by the cited art of record.

The present invention as recited in Applicant's amended claim 11 is characterized by the following features:

(1) a tank section which accommodates a first hydrogen storage alloy having a first desorbed hydrogen pressure in a first pressure equilibrium state and a second hydrogen storage alloy having a second desorbed hydrogen pressure in a second pressure equilibrium state, wherein the first desorbed hydrogen pressure has a higher value than the second desorbed hydrogen pressure.

(2) a comparing unit which compares the pressure of the hydrogen detected by the pressure detecting unit with the first desorbed hydrogen pressure and the second desorbed hydrogen pressure.

(3) an output unit which outputs (i) a first signal if the pressure of the hydrogen detected by the pressure detecting unit is equal to or larger than the first desorbed hydrogen pressure, (ii) a second signal if the pressure of the hydrogen detected by the pressure detecting unit is less than the first desorbed hydrogen pressure and equal to or larger than the second desorbed hydrogen pressure, and (iii) a third signal if the pressure of the hydrogen detected by the pressure detecting unit is less than the second desorbed hydrogen pressure.

As described below, the cited art neither discloses nor suggests such features of Applicant's claimed invention.

It discloses a storage tank 3 in which a hydrogen storage alloy MH and a tank for detecting a residual amount 4 in which another kind of hydrogen storage alloy MH1 are stored.

Since the alloy MH1 has larger pressure changes for a hydrogen storage amount especially in the Plateau region of a PCT (pressure-composition-temperature) curve than that of the alloy MH, the residual amount of hydrogen can be estimated by monitoring a pressure sensor 20 which detects a pressure of the tank 4, provided that the flow rate ratios of hydrogen gases from respective tanks are controlled to the same as that of the amount of the alloys filled in the tanks.

Kanazawa discloses using a mixture of hydrogen storage alloys so that the relationship between the storage amount of the hydrogen storage alloys and an equilibrium pressure is to be linear. D1 discloses adjusting a mixture ratio of TiFe system metal hydride and misch metal system metal hydride to achieve the linear relationship between the storage amount of the hydrogen storage alloys (H/M) and their equilibrium pressure.

Tsutsumi discloses mixing multiple kinds of hydrogen storage alloys to avoid drastically decreasing the hydrogen pressure during the initial and final stages of desorption.

In the Office Action, the Examiner indicated that various phrases in Applicant's claim 11, including "capable of," "for accommodating," "for generating," "for detecting," "for comparing," and "for outputting" do not limit the structure of the claim and that the phrases state capable functions only. (Office Action, page 8, lines 5-10). Since it is intended for the various features recited in Applicant's claim 11 to be given patentable weight in connection with the associated structural elements, namely, the tank section, the pressure detecting unit, the comparing unit, and the output unit, the above-mentioned phrases have been amended as indicated above.

In connection with the cited Ito and Kanazawa references, these references neither disclose nor suggest the characteristic features (1), (2) and (3) of claim 11 as discussed above.

It is noted that in the Interview Summary dated December 16, 2010, the Examiner stated “Examiner agreed that the new limitations were fully supported and would overcome the prior art rejections of record.” In that Interview Summary, the Examiner was referring to the rejection of the claims in light of the Ito, Kanazawa, Fujitani and Dickman references. In the Office Action under reply, the Examiner newly presented the Tsutsumi reference. This reference, however, only discloses feature (1) discussed above, as asserted by the Examiner, but Tsutsumi neither discloses nor suggests characteristic features (2) and (3).

Hence, the cited art neither discloses nor suggests Applicant’s recited comparing unit which compares the pressure of the hydrogen detected by the pressure detecting unit with the first desorbed hydrogen pressure and the second desorbed hydrogen pressure, and the cited art neither discloses nor suggests Applicant’s recited output unit which outputs the first signal, the second signal and the third signal.

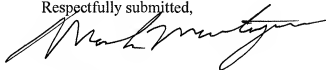
Therefore, neither Ito, Kanazawa nor Tsutsumi discloses the above-described features of Applicant’s independent claim 11. Hence, Applicant’s amended claim 11 and the dependent claims thus patentably distinguish over Ito, Kanazawa, and Tsutsumi. In addition, Dickman, which was cited against dependent claim 14, adds nothing to change this conclusion.

In view of the above, it is submitted that Applicant's claims, as amended, patentably distinguish over the cited art of record. Accordingly, reconsideration and allowance of the application and claims is respectfully requested.

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COWAN, LIEBOWITZ & LATMAN, P.C.
1133 Avenue of the Americas
New York, NY 10036-6799
T (212) 790-9200

Respectfully submitted,



Mark Montague
Reg. No. 36,612